

CLAIMS

What is claimed is:

1. A cast bench for holding laser components comprising:
a base having a top surface; and
a plurality of optical component supports cast with and integral with said base and extending from said top surface, said optical component supports being positioned to support optical components.
2. The bench of claim 1 wherein said optical component supports are provided in a plurality of heights, in a plurality of widths, and in a plurality of areas throughout said top surface of said base.
3. The bench of claim 1 wherein selected ones of said optical component supports are customizable optical component supports, said customizable optical component supports comprising a solid piece of material extending from said base and being adapted for customization to hold specific optical components in specific positions on said bench.
4. The bench of claim 1 further comprising a kinematic mount area provided in said top surface of said base, said kinematic mount area comprising a kinematic mount cone, a kinematic mount groove, and a kinematic mount flat surface.

5. The bench of claim 1 wherein said bench is provided with rigidity by cast support struts integral with said base, said cast support struts being spaced to form at least a first support region and a second support region, said first support region having support struts spaced more closely together than the support struts of said second support region.

6. The bench of claim 1 wherein at least two of said optical component supports are sized and positioned to act in concert to hold a single optical component.

7. The bench of claim 1 further comprising at least one aperture cast into said bench through said top surface of said base, said aperture being adapted to accept conduits therethrough for connection to components mounted on said bench.

8. The bench of claim 7 further comprising at least one conduit guide beneath said top surface of said bench for routing said conduits beneath said top surface.

9. The bench of claim 1 wherein a plurality of said optical component supports are provided with threaded holes therein for accepting optical components or intermediate optical component mounts.

10. A method for assembling a laser system comprising:
casting an optical bench to form a base having a top surface and a plurality of optical component supports integral with said base and extending from said top surface;

machining selected ones of said optical component supports to adapt said optical component supports to hold optical components; and

selecting optical components from a group of optical components and mounting said selected optical components to said selected ones of said optical component supports.

11. The method of claim 10 further comprising:

providing at least one aperture in said base extending through said top surface;

and

routing a conduit through said aperture to an optical component mounted on said base.

12. The method of claim 10 wherein machining said selected ones of said optical component supports comprises providing said selected ones of said optical component supports with threaded holes.

13. The method of claim 10 wherein machining said selected ones of said optical component supports comprises removing excess material from said selected ones of said optical component supports to form an optical component mount.

14. The method of claim 10 further comprising providing aligned ones of said optical component supports during said casting of said optical bench, said aligned ones of said optical component supports being adapted to work in concert for the mounting of optical components requiring multiple supports.

15. The method of claim 10 further comprising casting support struts beneath said top surface of said base, said support struts being spaced to impart rigidity to said optical bench such that said optical bench is provided with a first region and a second region, said first region being more rigid than said second region and having said support struts spaced more closely together than support struts provided in said second region.

16. The method of claim 15 further comprising forming kinematic mount components in said top surface of said optical bench, said kinematic mount components comprising a kinematic mount cone, a kinematic mount groove, and a kinematic mount plane.

17. The method of claim 16 wherein said kinematic mount components are mounted at said first region of said bench and further comprising mounting a main oscillator on said kinematic mount components.

18. An optical mounting system comprising:

a cast base;

a plurality of optical component supports cast with and integral with said cast base and extending outwardly from a top surface of said cast base;

a plurality of support struts integral with said base and spaced beneath said top surface of said cast base to form a first region and a second region of said cast base, said first region having said support struts spaced more closely together than the support struts of said second region; and

kinematic mount components provided in said top surface of said cast base at said first region of said cast base.

19. The optical mounting system of claim 18 further comprising a main oscillator mounted on said kinematic mount components and a gain module mounted on said base at said second region, said optical mounting system further comprising an aperture through said top surface of said base for accepting at least one conduit from said main oscillator and at least one conduit guide beneath said top surface of said base for guiding said conduit.

20. The optical mounting system of claim 18 wherein at least one of said optical component supports is a customizable optical component support cast with additional material for machining into a customized optical component mount.